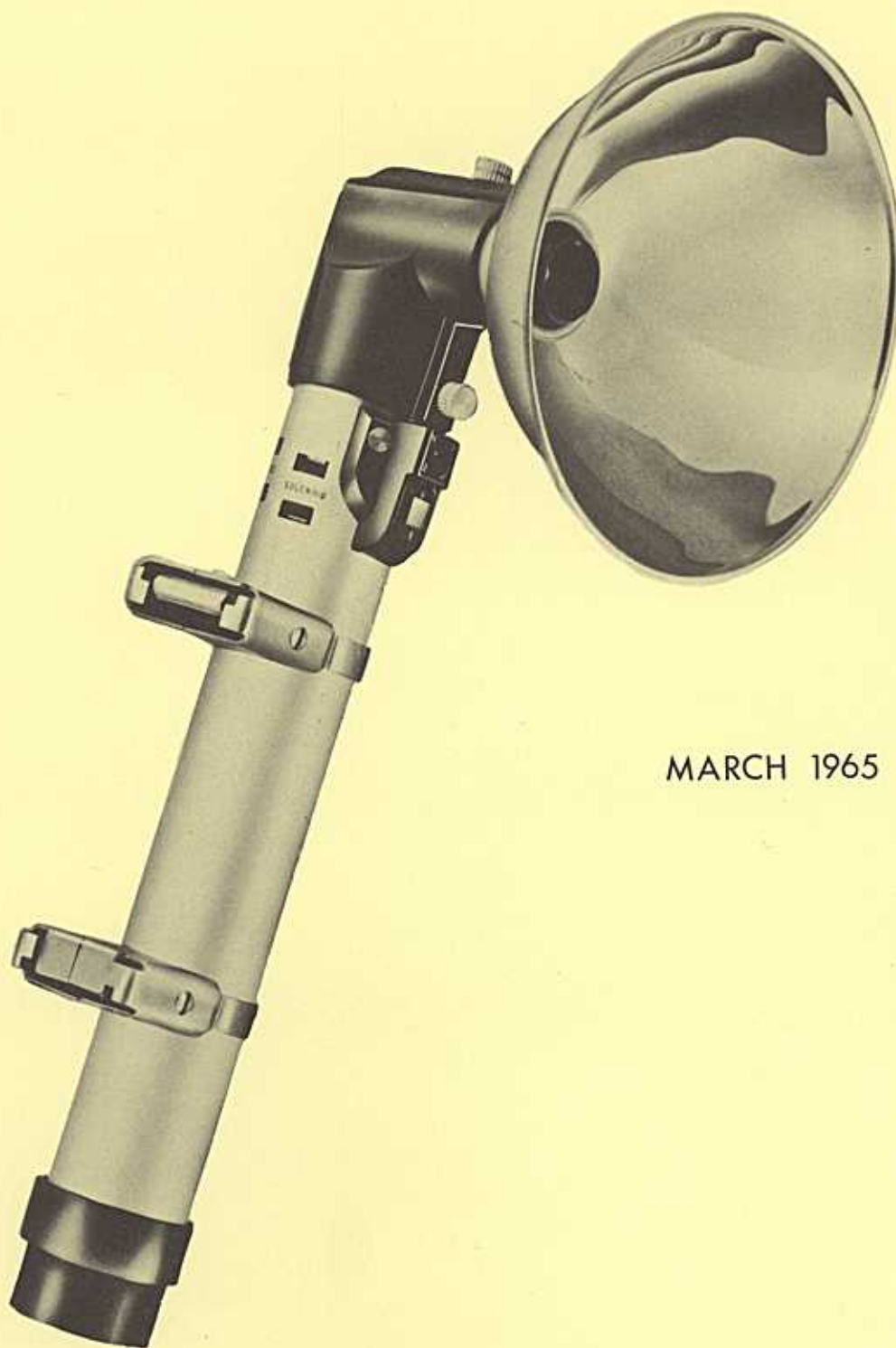


GRAFLITE[®] FLASH EQUIPMENT



MARCH 1965

GRAFLEX

**GENERAL
PRECISION**

TABLE OF CONTENTS

Paragraph	Title	Page
A	Introduction.	2
B	Trouble and Remedy Table.	2
C	Inspection and Check.	2
D	Cleaning.	5
E	Reassembly.	5
F	Solvents and Adhesives.	6
	Illustrated Parts List.	7

LIST OF ILLUSTRATIONS

Figure	Title	Page
1	Schematic Diagram, Graflite Jr. Battery Case and Side Lighting Unit - Battery and B. C.	4
2	Schematic Diagram, Graflite Battery Case.	5
3	Battery Case Complete (Graflite)	8
4	Switch and Outlet Assembly.	10
5	Graflite Flash Extension Unit.	12
6	Outlet Assembly (Extension Unit)	13
7	Battery Case Complete (Graflite Jr.).	14
8	Outlet Assembly (Graflite Jr. Battery Case).	15
9	Graflite 5 Inch Reflector.	16
10	Graflite 7 Inch Reflector.	17
11	Side Lighting Unit (Early Model).	18
12	Graflite 5 Inch Reflector (Early Model).	19

SECTION 61

GRAFLITE FLASH

A. INTRODUCTION

This section of the Service Parts Manual covers the Service Instructions and Parts List for the Graflite® Battery Case, Graflite Side Lighting Unit, Graflite Jr. Battery Case, 5 inch Reflector, and the 7 inch Reflector. The text covers troubleshooting, inspection, cleaning, and reassembly. Obvious disassembly and reassembly procedures are not stated.

B. TROUBLE AND REMEDY TABLE

The purpose of the following table is to list the most commonly encountered difficulties. Troubles due to operational errors are not listed, as it is assumed that the serviceman is thoroughly familiar with troubles of this type. Probable causes are listed in logical order.

TROUBLE	PROBABLE CAUSE	REMEDY
Graflite Battery Case, Graflite Jr. Battery Case, or Graflite Extension Unit		
Lamp does not fire	Weak or dead batteries	Replace batteries
	Cable malfunction	Check and repair
	Worn lamp locking ring (10, Fig. 3) or (13, Fig. 5) or (8, Fig. 7)	Replace ring
	Worn lamp locking ring spring (9, Fig. 3) or (12, Fig. 5) or (7, Fig. 7)	Replace spring
	Worn or bent contacts in switch and outlet assembly (Figure 4, 6, or 8)	Replace or straighten (refer to paragraph C)
5 inch Reflector		
Lamp does not fire	Screw (12 or 3, Fig. 9) loose	Tighten screw
Lamp does not clamp	Worn or damaged tube (2, Fig. 9)	Replace tube
7 inch Reflector		
Lamp does not eject	Spring (1, Fig. 10) damaged	Replace spring

C. INSPECTION AND CHECK

b. Procedure

1. Graflite Battery Case

NOTE

The following check will outline a procedure that simulates actual photographic use.

Battery outlet is hot at all times.

a. Equipment Needed

- (1) Voltmeter with a set of leads.
- (2) One test lamp in standard base socket.
- (3) Standard household male plug with contacts shorted.
- (4) Two or three size D cell batteries. (Check these batteries to be sure they are good.)

- (1) Insert test lamp in top receptacle. Insert batteries in case.
- (2) Turn circuit selector switch to all positions. Do not press switch button. Lamp should not light.
- (3) Place circuit selector in "N" position. With voltmeter, check the following:

	Extension	Shutter	Remote	Solenoid	Lamp
Press switch button	Hot	Dead	Dead	Hot	Hot
Shorted plug at REMOTE	Hot	Dead	Short	Hot	Hot
Shorted plug at SHUTTER	Hot	Short	Dead	Hot	Hot

(4) Place circuit selector in "1" position.

	Extension	Shutter	Remote	Solenoid	Lamp
Press switch button	Dead	Dead	Dead	Hot	Dead
Shorted plug at REMOTE	Dead	Dead	Short	Hot	Dead
Shorted plug at SHUTTER	Hot	Short	Dead	Dead	Hot

(5) Place circuit selector in "2" position.

	Extension	Shutter	Remote	Solenoid	Lamp
Press switch button	Hot	Dead	Dead	Hot	Hot
Shorted plug at REMOTE	Hot	Dead	Short	Dead	Hot
Shorted plug at SHUTTER	Hot	Short	Dead	Dead	Hot

2. Graflite Jr. Battery Case

The following check will outline a procedure that simulates actual photographic use.

a. Equipment Needed

- (1) Voltmeter with a set of leads.
- (2) One test lamp in standard base socket.
- (3) Standard household male plug with contacts shorted.

(4) Two size D cell batteries. (Check these batteries to be sure they are good.)

(5) One B. C. cartridge. (Check this cartridge to be sure it is good.)

b. Procedure

- (1) Insert test lamp in top receptacle. Insert batteries in case.
- (2) With voltmeter, check the following:

	Shutter	Extension N	Lamp	Extension BC
Shorted plug at SHUTTER	Short	Hot	Hot	Dead
Shorted plug at N EXT.	Hot	Short	Dead	Dead

- (3) Replace batteries with BC cartridge. With voltmeter, check the following:

	Shutter	Extension N	Lamp	Extension BC
Shorted plug at SHUTTER	Short	Hot	Hot	Dead
Shorted plug at N EXT.	Hot	Short	Dead	Dead

3. Reflector, 7 inch

- a. Attach to top of battery case.
- b. Ring (10, Fig. 3) should slide forward when button (5, Fig. 10) is pressed and eject flash lamp.

4. Reflector, 5 inch

- a. Insert bayonet base flash lamp in reflector.

- b. Press plunger assembly (9, Fig. 9); lamp should eject.

- c. Electrical Circuit - Check electrical circuit with continuity tester. A circuit must be complete from pin (5, Fig. 9) to plunger assembly (9) and from screw (12) to tube (2).

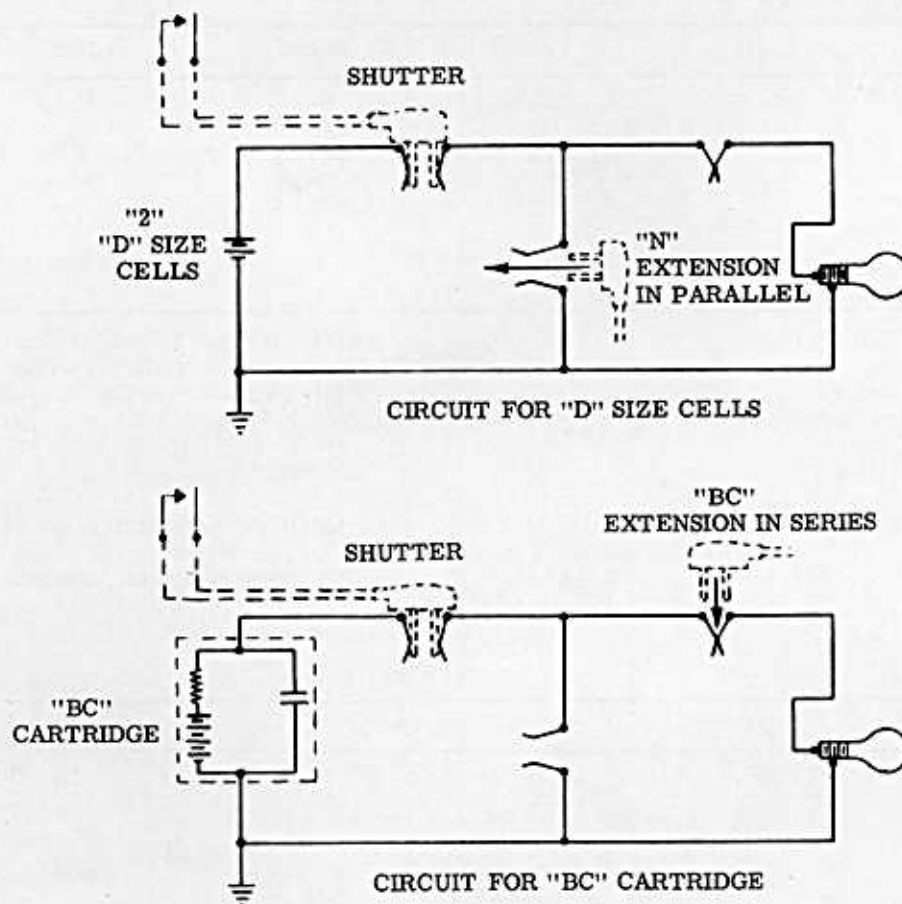


Figure 1. SCHEMATIC DIAGRAM, GRAFLITE JR. BATTERY CASE AND SIDE LIGHTING UNIT - BATTERY AND B. C.

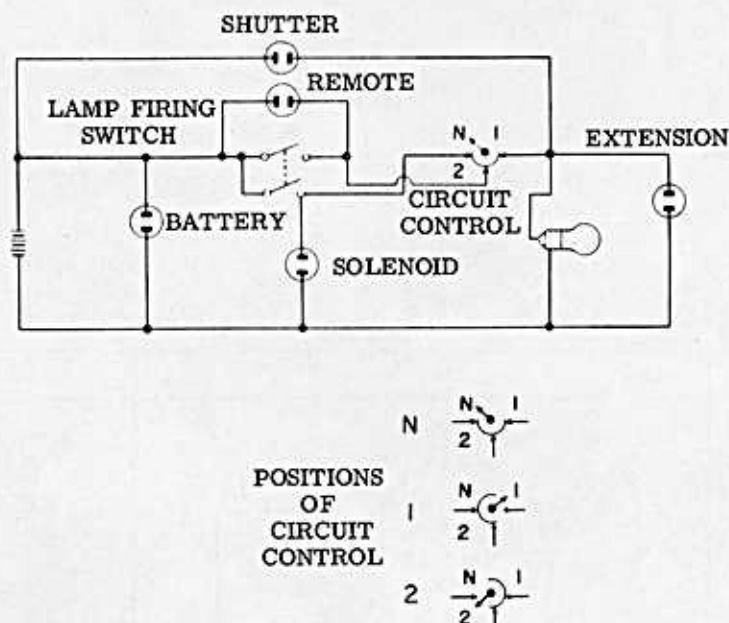


Figure 2. SCHEMATIC DIAGRAM, GRAFLITE BATTERY CASE

D. CLEANING

Clean all metal surfaces with chlorothene. Clean plastic surfaces with a dry lint-free cloth.

E. REASSEMBLY

1. Graflite Battery Case (Figure 3)

a. When assembling contact (15) to switch (14), the open section of the contact should be positioned up and the white dot on the switch positioned to the upper left. Gently insert oriented parts, simultaneously pressing and turning them into round hole above button (16). Switch must be inserted to flange and must turn in a clockwise direction without fouling.

b. When replacing gasket (11), flat side should face front of case (front is marked Graflex).

c. When replacing ring (10) in receptacle (7), key of ring must protrude into recess that accommodates spring (9). Place spring (9) into its recess. Slide these oriented parts into case so spring faces front of case and stud on spring centers in lower of two holes in front of case.

2. Switch and Outlet Assembly (Figure 4)

When replacing contact (16), its vertical fork must go through rectangular hole of contact (18). Insulator (17) must separate these two contacts.

Assemble key assembly (12) with spring portion between inner tabs of support (15). Spring (13) must be compressed behind vertical fork of contact (16).

3. Extension Unit (Figure 5)

When replacing ring (13) in receptacle (11), key of ring must protrude into recess that accommodates spring (12). Place spring (12) into its recess. Slide these oriented parts into case so spring faces front of case and stud on spring centers in lower of two holes in front of case.

4. Outlet Assembly - Extension Unit

Refer to Figure 6 for reassembly.

5. Graflite Jr. Battery Case (Figure 7)

When replacing ring (8) in receptacle (5), key of ring must protrude into recess that accommodates spring (7). Place spring (7) into its recess. Slide these oriented parts into case so spring faces front of case and stud of spring centers in lower of two holes in front of case.

6. Outlet Assembly - Graflite Jr.

Refer to Figure 8 for reassembly.

7. Reflector, 5 inch (Figure 9)

When replacing pin (5), place grooved end in cone at bottom of head assembly (13). Slide plunger assembly (9) into head assembly, positioning retainer (6) so cut-out groove encircles pin (5). Assemble

reflector (1), "S" slot up, over tube (2).

8. Reflector, 7 inch

Refer to Figure (10) for reassembly.

F. SOLVENTS AND ADHESIVES

Compound	Manufacturer	Use
<u>Solvents</u>		
Chlorothene	Dow Corning Corp. Midland, Mich.	Cleaning metal parts
Toluol	Eastman Kodak Company Rochester, New York	Reactivate or remove old EC-880 adhesive
<u>Adhesives</u>		
EC-880	Minnesota Mining & Manufacturing Company - St. Paul, Minn.	Yoke pad to clamp assembly

PARTS LIST

The Group Assembly Parts Lists are listed in disassembly order. The list divides the components into major assemblies, their subassemblies and parts. By the use of indented columns, the relationship of the assemblies to the subassemblies and parts is obtained.

The column titled "Figure and Index No." contains the index number in disassembly order of the items illustrated. Do not use the figure or index number in correspondence -- specify the catalog or part number and name. Finish should also be included where specified.

The column titled "nomenclature" (including numbered columns) lists item nomenclature on the Graflex drawing. The assembly in the column marked "3" will be a component of the first assembly which preceded it in the column marked "2" etc. The code "NP" will indicate that this part is "not procurable" and that the "next higher assembly" (NHA) should be ordered. The code "AR" is used for bulk items when an indefinite amount may or may not be used "as required." The code "LP" is used when an item may be "locally purchased."

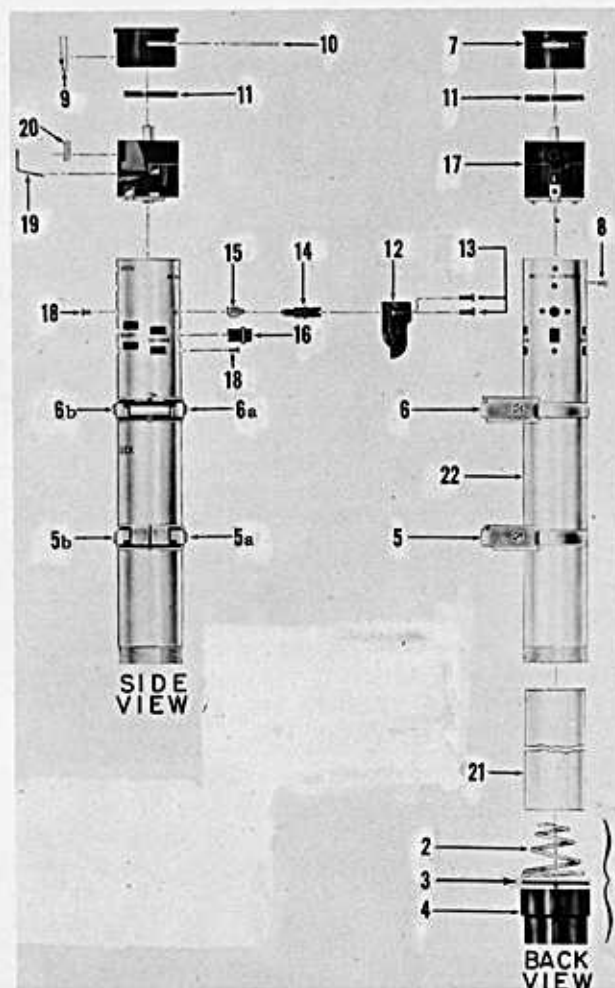


Figure 3. BATTERY CASE COMPLETE (GRAFLITE)

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	
3-	30950G1						Case Complete - Battery, 3 cell, Cat. No. 2773 (includes mounting brackets)	1	
	30950G2						Case Complete - Battery, 2 cell, Cat. No. 2772 (includes mounting brackets)	1	
	30950G7						Case Complete - Battery, 3 cell, Cat. No. 2783 (less mounting brackets)	1	
	30950G6						Case Complete - Battery, 2 cell, Cat. No. 2782 (less mounting brackets)	1	
-1	33780G3						Cap Assembly	1	
-2	33913						Spring - Compression	1	
-3	33920P1						Contact - Spring	1	
-4	31244P3						Cap - Case	1	
-5	30986G1						Bracket Assembly - Lower (included in p/n 30950G1 & G2)	1	
-5a	31058P1						Screw - Machine (special)	1	
-5b	30985P1						Nut - Machine (special)	1	
							Bracket - Lower	NP	NHA
-6	30981G1						Bracket Assembly - Upper (included in p/n 30950G1 & G2)	1	
-6a	31058P1						Screw - Machine (special)	1	
-6b	30985P1						Nut - Machine (special)	1	
	30983P1						Latch - Bracket	1	
	30984						Spring - Latch	1	
	31282P1						Stud - Spring	1	
							Bracket - Upper	NP	NHA

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.
3-7	31084P1	.					Receptacle - Lamp	1
	Attaching Part							
-8	31089P2	.					Screw - Machine (special)	1
	-----***----							
-9	33878	.					Spring - Lamp Locking Ring	1
-10	31060	.					Ring - Lamp Locking	1
-11	31245	.					Gasket - Case	1
-12	30977P1	.					Guard - Switch	1
	Attaching Part							
-13	31044P2	.					Screw - Machine (special)	2
	-----***----							
-14	30973P1	.					Switch - Circuit Selector	1
-15	31130P1	.					Contact - Circuit Selector Switch	1
-16	30976	.					Button - Lamp Firing Switch	1
-17	30957G1	.					Switch and Outlet Assembly (Figure 4)	1
	Attaching Part							
-18	104B2-3C	.					Screw - Machine, No. 2-56 x 3/16, oval hd.	2
	-----***----							
-19	30972P1	.					Contact - Battery Outlet	1
-20	30975P1	.					Nut - Battery, Negative Contact	1
-21	31054P1	.					Liner - Battery Case, 3 cell	1
	31054P2	.					Liner - Battery Case, 2 cell	1
-22	32425P1	.					Case - Battery, 3 cell (replaces 30951G1)	1
	32425P2	.					Case - Battery, 2 cell (replaces 30951G2)	1

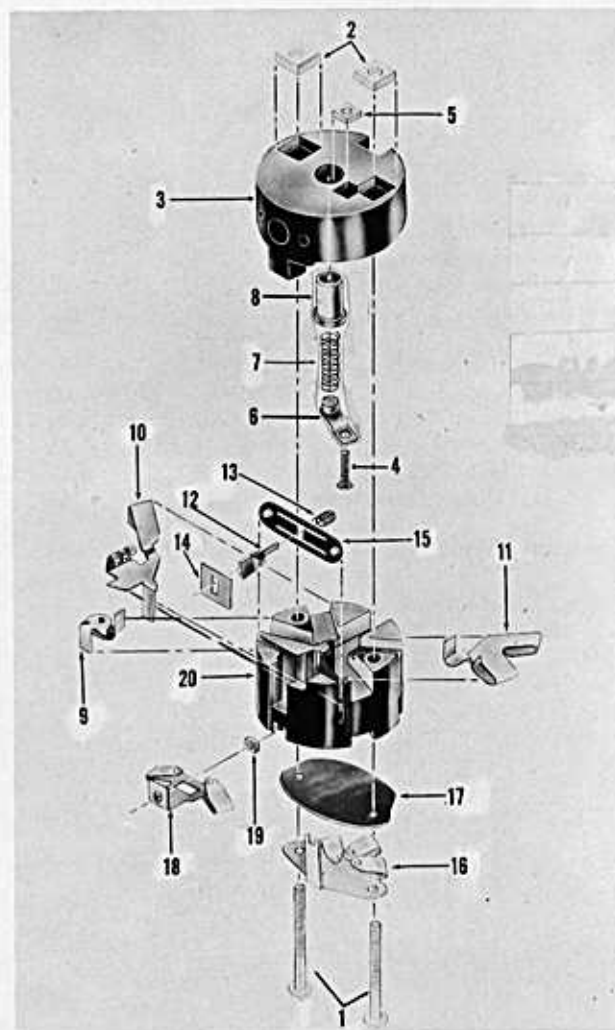


Figure 4. SWITCH AND OUTLET ASSEMBLY

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.
4-	30957G1		Switch and Outlet Assembly (Graflite Battery Case).....	Ref.
	30957G2		Switch and Outlet Assembly (Early Side Lighting Unit).....	Ref.
-1	112B4-23		. Screw - Machine, No. 4-40 x 1-7/16, truss hd.....	2
-2	200B4S		. Nut - Machine, No. 4 x 6/64, square	2
-3	30966P1		. Insulator - Top.....	1
-4	100B2-7R		. Screw - Machine, No. 2-56 x 7/16, flat hd	1
-5	200B2S		. Nut - Machine, No. 2 x 1/16, square	1
	33758G1		. Contact Assembly(Obsolete - replace with indices 6, 7, & 8)..	Ref.
-6	30958G1		. Contact Assembly - Plunger	1
-7	30970P1		. Spring.....	1
-8	30971		. Plunger.....	1
-9	31022P1		. Contact - Switch to Solenoid.....	1
-10	30964P1		. Contact - Switch to Remote	1
-11	30963P1		. Contact - Circuit Selector to Switch.....	1
-12	31862G1		. Key Assembly (used with 30957G1).....	1
			. . Spring	NP
			. . Key.....	NP
-13	31216		. Spring (used with 30957G1).....	1
-14	30968		. Retainer - Switch (used with 30957G1).....	1
-15	31219		. Support - Contact Tip (used with 30957G1).....	1

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.
4-16	30961P1	.					Contact - Positive Outlet (used with 30957G1)	1
-17	30965P1	.					Insulator - Contact	1
-18	30962P1	.					Contact - Negative Outlet	1
-19	200B2S	.					Nut - Machine, No. 2 x 1/16, square.....	1
-20	30967P1	.					Insulator - Bottom	1

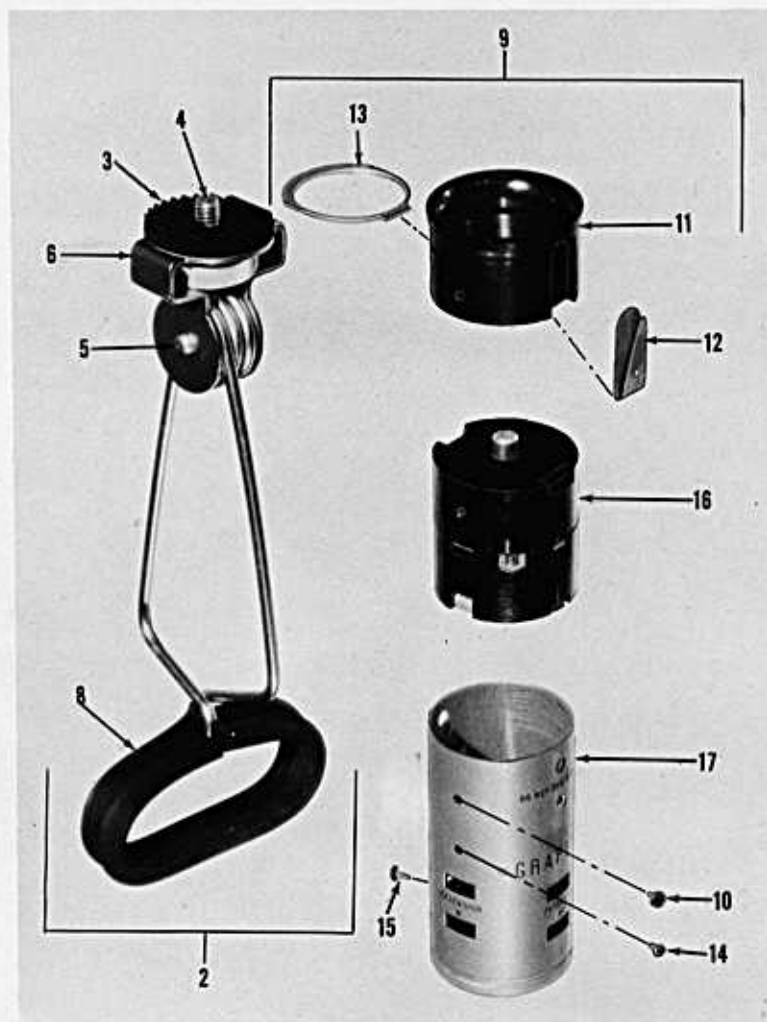


Figure 5. GRAFLITE FLASH EXTENSION UNIT

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.
5-	33866G1		Extension Unit Complete - Graflite Flash, Cat. No. 2778 (replaces p/n 30048G1, Figure 11)	1
-1	31040P2	.	Cord - Extension, Cat. No. 2706 (not shown)	1
-2	33879G1	.	Clamp Complete, Cat. No. 2777 (replaces p/n 31255G1)	1
-3	33876	.	Pad - Yoke	1
-4	31705P3	.	Knob	1
-5	120-6-4C	.	Screw - Drive, No. 6 x 1/4, round hd.	1
-6		.	Yoke - Clamp	NP NHA
-7		.	Hub - Clamp (not shown)	NP NHA
-8		.	Clamp Assembly	NP NHA
-9	33867G1	.	Unit Assembly - Extension, Cat. No. 2776	1
-10	31089P2	.	Screw - Machine (special)	1
-11	31084P1	.	Receptacle - Lamp	1
-12	33878	.	Spring - Lamp Locking Ring	1
-13	31060	.	Ring - Lamp Locking	1
-14	30921-33C	.	Screw - Self Threading, No. 2 x 1/4, pan hd	1
-15	33921-2C	.	Screw - Self Threading, No. 2 x 3/16, pan hd	1
-16	33868G1	.	Outlet Assembly (Figure 6)	1
-17	33872G1	.	Case Assembly	1

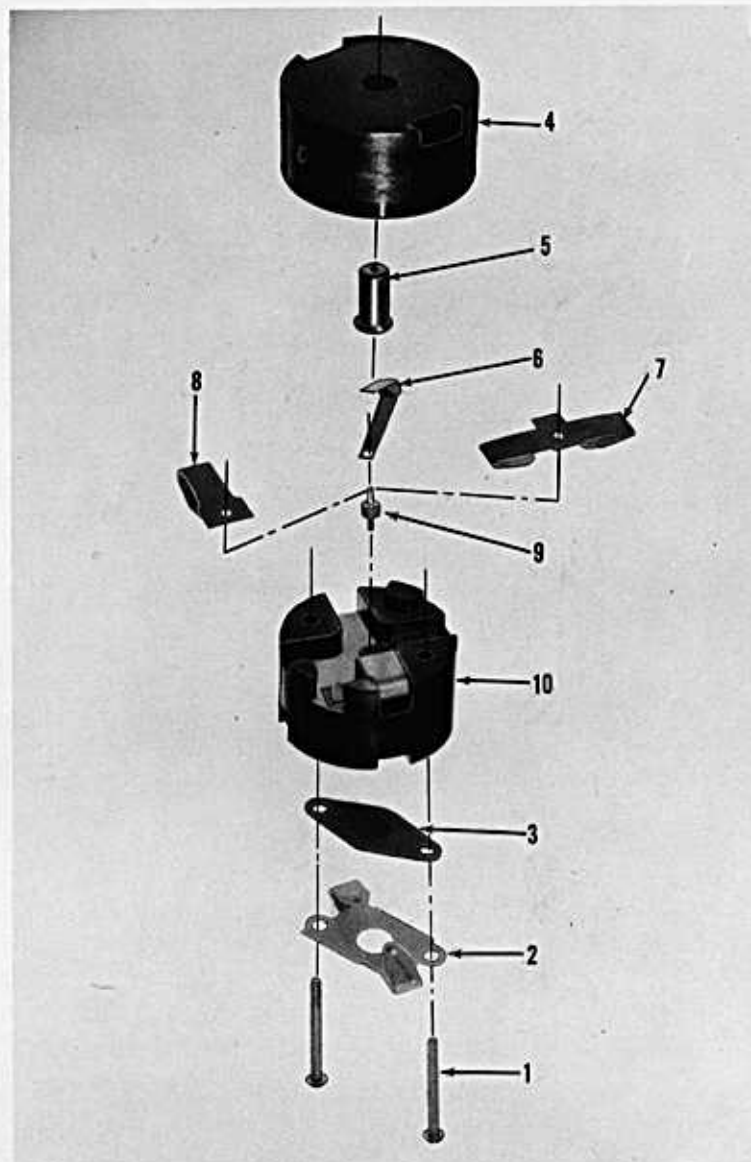


Figure 6. OUTLET ASSEMBLY (EXTENSION UNIT)

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.
6-	33868G1						Outlet Assembly - Extension Unit (Current)	Ref.
-1	102B4-18	.					Screw - Drive, No. 4-40 x 1-1/8, round hd.	2
-2	33869P1	.					Contact - Lower, B.C. Outlet.	1
-3	33855	.					Insulator - Contact	1
-4	33850P1	.					Insulator - Top.	1
-5	33860	.					Plunger - Lamp	1
-6	33858	.					Spring - Plunger.	1
-7	33871P1	.					Contact - Upper, Normal Outlet	1
-8	33862	.					Contact - Upper	1
-9	33859	.					Pilot.	1
-10	33923G2	.					Insulator Assembly.	1

GRAFLITE FLASH

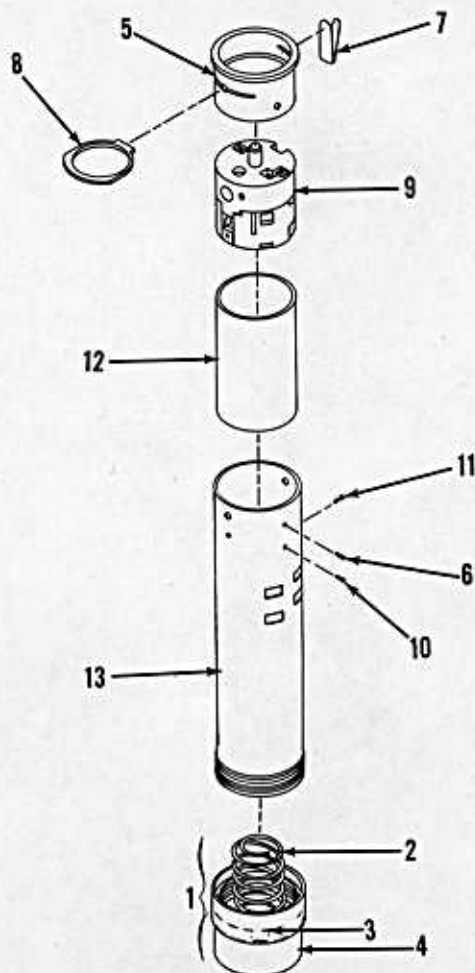


Figure 7. BATTERY CASE COMPLETE (GRAFLITE JR.)

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.
7-	33848G1						Case Complete - Battery, Graflite Jr., Cat. No. 2770.....	1
-1	33780G3						. Cap Assembly	1
-2	33913						. . Spring - Compression	1
-3	33920P1						. . Contact - Spring	1
-4	31244P3						. . Cap - Case.....	1
-5	31084P1						. Receptacle - Lamp	1
	Attaching Part							
-6	31089P2						. Screw - Machine (special)	1
	-----***----							
-7	33878						. Spring - Lamp Locking Ring	1
-8	31060						. Ring - Lamp Locking.....	1
-9	33849G1						. Outlet Assembly (Figure 8).....	1
	Attaching Parts							
-10	30921-33C						. Screw - Self Threading, No. 2 x 1/4, pan hd.	1
-11	33921-2C						. Screw - Self Threading, No. 2 x 3/16, pan hd.	1
	-----***----							
-12	31054P3						. Liner	1
-13	33865P1						. Case - Battery.....	1

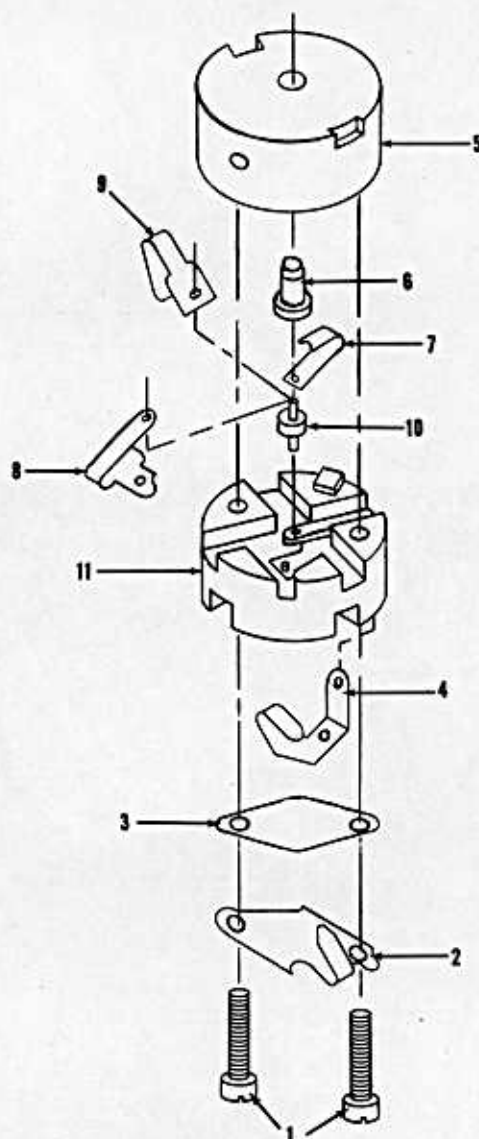


Figure 8. OUTLET ASSEMBLY (GRAFLITE JR. BATTERY CASE)

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.
8-	33849G1		Outlet Assembly- Graflite Jr. Battery Case	Ref.
-1	102B4-18		. Screw - Drive, No. 4-40 x 1-1/8, round hd.	2
-2	33852P1		. Contact - Lower, Shutter	1
-3	33855		. Insulator - Contact	1
-4	33853P1		. Contact - Lower, Normal Outlet	1
-5	33850P1		. Insulator - Top.	1
-6	33860		. Plunger - Lamp	1
-7	33858		. Spring - Plunger.	1
-8	33857P1		. Contact - Upper, B.C. Outlet.	1
-9	33862		. Contact - Upper	1
-10	33859		. Pilot.	1
-11	33923G1		. Insulator Assembly.	1

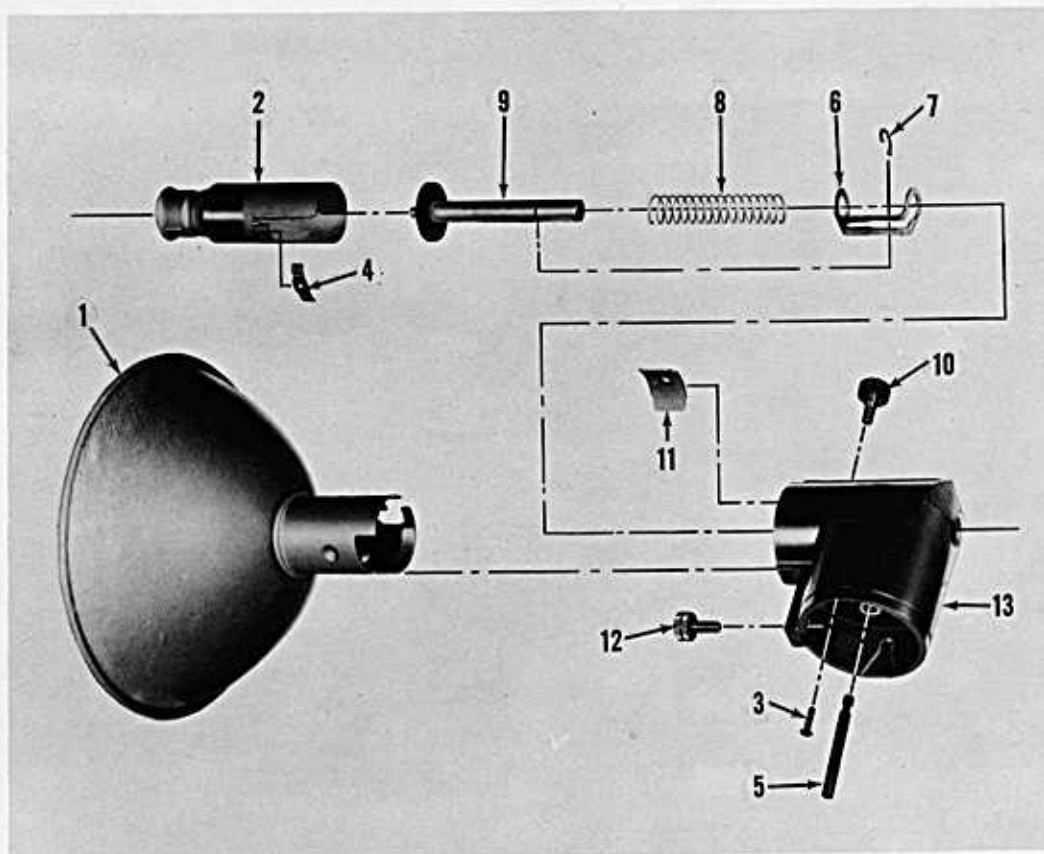


Figure 9. GRAFLITE 5 INCH REFLECTOR

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.
9-	33880G1		Reflector Complete - Graflite 5 inch, Cat. No. 2745 (replaces p/n 30988G1, Figure 12)	1
-1	33881G1		. Reflector Assembly.	1
-2	33887P1		. Tube - Flash Bulb.	1
			Attaching Parts	
-3	31270-2		. Fastner (includes lockwasher).	1
-4	33891		. Nut - Machine (special)	1
			-----***-----	
-5	33888		. Pin - Contact.	1
-6	33890P1		. Retainer - Plunger	1
			Attaching Part	
-7	253-4		. Ring - Retaining, 0.269 x 0.376 x 0.025.	1
			-----***-----	
-8	33889		. Spring - Plunger.	1
-9	33885G1		. Plunger Assembly.	1
-10	33924P1		. Screw - Machine (special)	1
-11	33892		. Clamp - Reflector Tube	1
-12	33893P1		. Screw - Machine (special)	1
-13	33883G1		. Head Assembly.	1

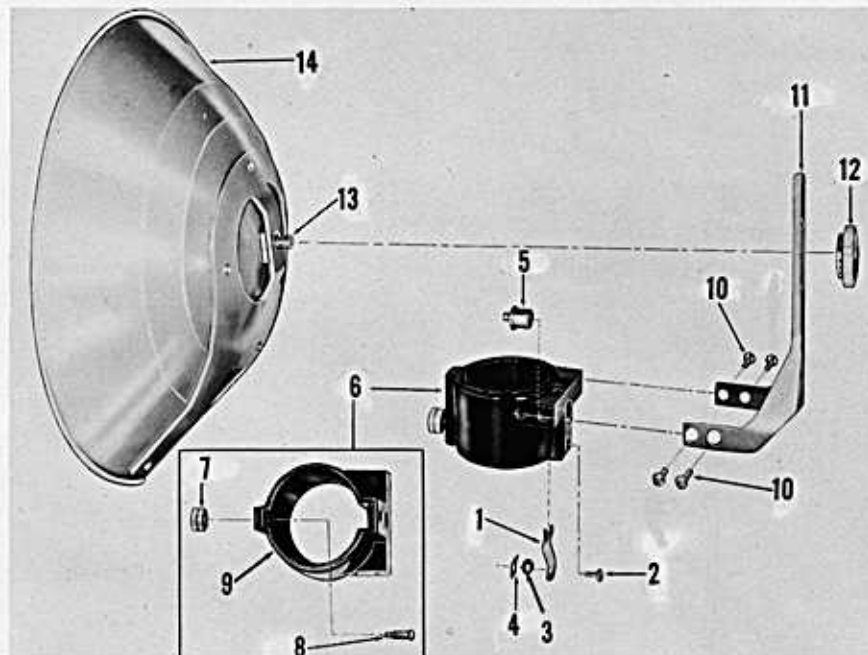


Figure 10. GRAFLITE 7 INCH REFLECTOR

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	
10-	31008G1						Reflector Complete - 7 Inch, Cat. No. 2747	1	
-1	31018P1						Spring - Lamp Release Button	1	
	Attaching Parts								
-2	104B3-4C						Screw - Machine, No. 3-48 x 1/4, oval hd	1	
-3	221-3U						Washer - Lock, internal tooth for No. 3 screw	1	
-4	200B3HU						Nut - Machine, No. 3 x 1/16, hex	1	

-5	31017P1						Button - Lamp Release	1	
-6	31013G1						Head Assembly - Second	1	
-7	30995P1						Knob - Head Locking Screw	1	
-8	30994						Screw - Machine (special)	1	
-9							Head Assembly - First	NP	NHA
	Attaching Part								
-10	125-4-4A						Screw - Thread Forming, No. 4 x 1/4, oval hd	4	

-11	31015P1						Support - Reflector	1	
	Attaching Parts								
-12	31016P2						Knob - Reflector Locking	1	
-13	31090P2						Stud (special)	1	

-14	31009G2						Reflector Assembly	1	

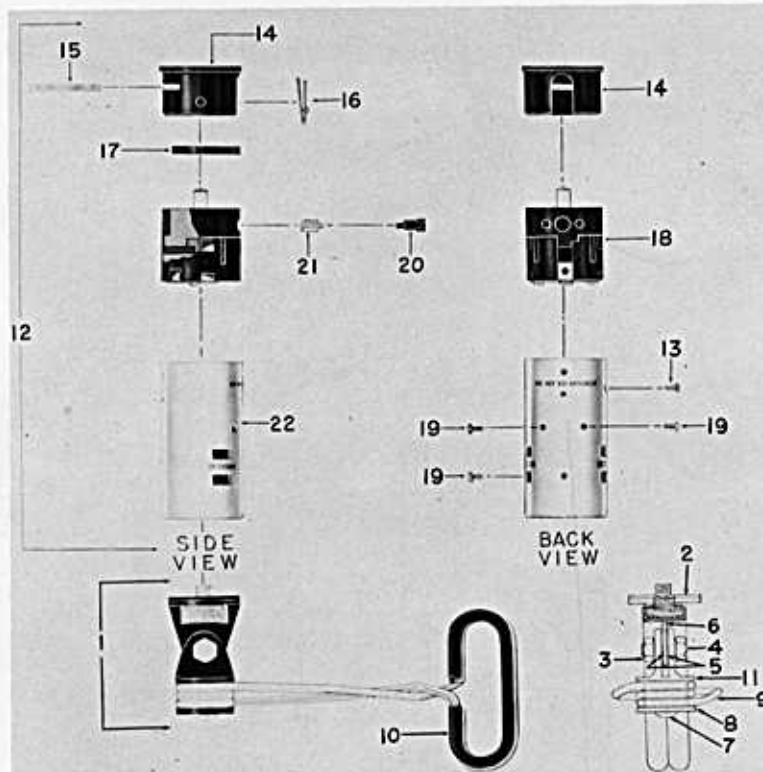


Figure 11. SIDE LIGHTING UNIT (EARLY MODEL)

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.
11-	30048G1						Lighting Unit Complete - Side, (replaced by p/n 33866G1, Figure 5)	Ref.
-1	31255G1						Clamp Complete, Cat. No. 2580 (replaced by p/n 33879G1, Figure 5-2).	Ref.
-2	30473-31						Washer - Flat, 1.296 x 0.437 x 0.125.	1
-3	31256P2						Nut - Machine (special).	1
-4	31257P1						Screw - Machine (special).	1
-5	30473-70H						Washer - Flat, 0.593 x 0.265 x 0.010.	2
-6	31258G1						Head Assembly.	1
-7							Screw - Drive.	NP NHA
-8							Washer - Body.	NP NHA
-9							Clamp Assembly.	NP NHA
-10							Pad - Clamp.	NP
							Clamp.	NP
-11							Body.	NP NHA
-12	31019G1						Lighting Unit Assembly - Side (replace by p/n 33867G1).	NP
-13	31089P2						Screw - Machine (special).	1
-14	31084P1						Receptacle - Lamp.	1
-15	31060						Ring - Retainer.	1
-16	33878						Spring - Lamp Locking Ring (replaces 30925G1).	1
	30925G1						Spring - Lamp Locking Ring (Obsolete - use p/n 33878).	NP
-17	31245						Gasket - Battery.	1
-18	30957G2						Switch and Outlet Assembly (Figure 4).	1
-19	110B2-3E						Screw - Machine, No. 2-56 x 3/16, binding hd.	3
-20	31027						Plug - Selector Switch.	1
-21	31130P1						Contact - Circuit Selector Switch.	1
-22	31020G1						Case and Tripod Nut Assembly.	1

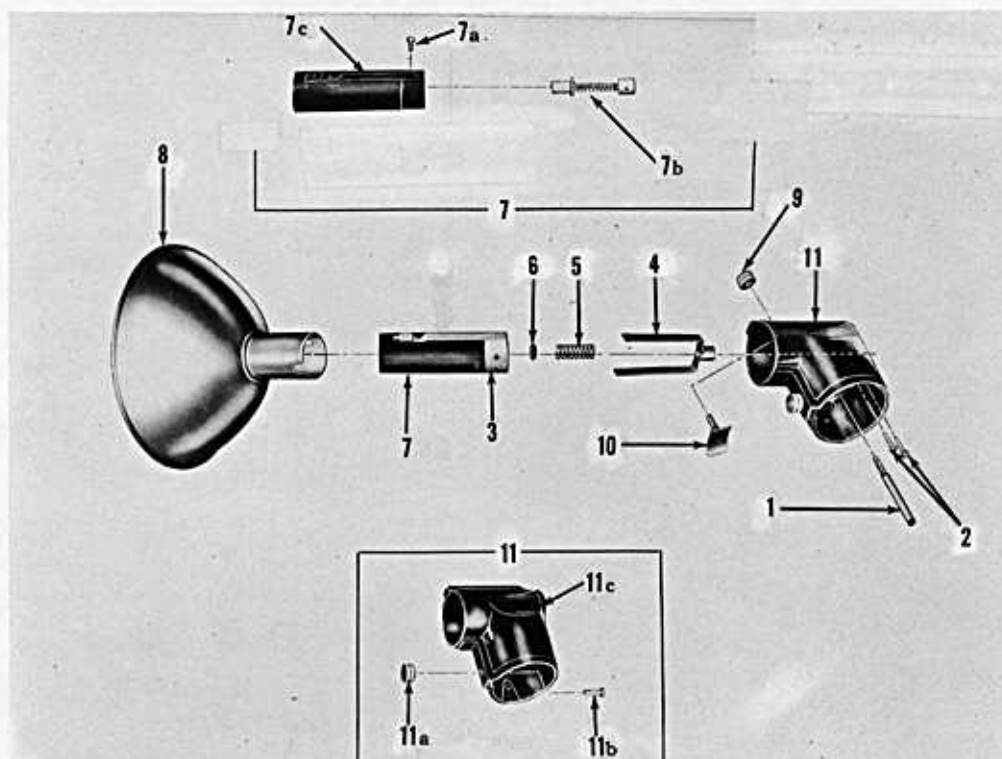


Figure 12. GRAFLITE 5 INCH REFLECTOR (EARLY MODEL)

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	
12-	30988G1	Reflector Complete - 5 Inch, Cat. 2749 (replaced by p/n 33880G1, Figure 9).....						1	Ref.
-1	31120	.	.	.	.	.	Screw - Machine (special)	1	
-2	30921-12A	.	.	.	.	.	Screw - Self Threading, No. 2 x 3/8, round hd	2	
-3	31910P1	.	.	.	.	.	Lock - Lamp (replaces 30998P1)	1	
-4	31000G1	.	.	.	.	.	Release Assembly - Lamp	1	
-5	31094P1	.	.	.	.	.	Spring - Ejector Button	1	
-6	31092	.	.	.	.	.	Insulator - Ejector Spring	1	
-7	31128G1	.	.	.	.	.	Receptacle Assembly - Lamp	1	
-7a	112-2-6	.	.	.	.	.	Screw - Machine, No. 2-56 x 3/8, truss hd.	1	
-7b	33759G1	.	.	.	.	.	Plunger Contact Assembly	1	
-7c	30997P1	.	.	.	.	.	Receptacle - Lamp	1	
-8	30989G1	.	.	.	.	.	Reflector Assembly	1	
	Attaching Parts								
-9	31106P1	.	.	.	.	.	Nut - Clamp.	1	
-10	31110G1	.	.	.	.	.	Clamp Assembly - Reflector	1	

-11	30992G1	.	.	.	.	.	Head Assembly - Second	1	
-11a	30995P1	.	.	.	.	.	Knob - Head Locking Screw	1	
-11b	30994	.	.	.	.	.	Screw - Machine (special)	1	
-11c		.	.	.	.	.	Head Assembly - First	NP	NHA